DOCUMENT RESUME

ED 264 281 TM 850 767

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TITLE	The Cooperative Preschool Inventory: Test Review.
PUB DATE	12 Sep 85
NOTE	9p.
PUB TYPE	Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Correlation; *Culture Fair Tests; *Disadvantaged Youth; Economically Disadvantaged; Factor Structure; Intelligence Quotient; Preschool Education; *Preschool Tests; *School Readiness Tests; *Screening Tests; Socioeconomic Status; Test Bias; Test Construction; Test Reliability; Test Reviews; Test Validity
IDENTIFIERS	Caldwell Soule Preschool Inventory; *Cooperative Preschool Inventory (Revised); Project Head Start; Stanford Binet Intelligence Scale

ABSTRACT

This paper is a brief psychometric review of the Cooperative Preschool Inventory (CPI-R), Revised Edition intended to supplement the review of CPI in the "Seventh Mental Measurements Yearbook." The 1970 revision of the CPI-R is a brief screening test for teacher-administered testing of three-to-six-year-old children. It is intended to indicate the degree of disadvantage which a child from a deprived background has, at the time of entering school, so that deficits can be remediated. The CPI-R has 64 items in four factor-analytically derived subtests: personal-social responsiveness; associative vocabulary; numerical concept activation; and sensory concept activation. Items are scored correct or incorrect, and responses are recorded in the four-page booklet. Examinees may draw in the booklet, and periodic reinforcement for correct answers may be given by the examiner. Studies of the CPI's validity are minimal. When it was administered to 317 North Carolina kindergarteners, there was found to be a socioeconomic component involved in test scores. There was also a correlation between CPI scores and intelligence quotient. Test norms are based on scores of 1531 children in over 150 Head Start classes, aged 3 to 6. Test reliability is reported as ranging from .86 to .92. (GDC)

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THE COOPERATIVE PRESCHOOL INVENTORY: TEST REVIEW

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September 12, 1985

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INTRODUCTION

This paper is a brief psychometric review of the Cooperative Preschool Inventory, Revised Edition (Cooperative Tests and Services, 1970). It supplements the review of the CPI in the Seventh Mental Measurements Yearbook (1972).

The review is structured to give the reader an overview of the purposes of the instrument, its theoretical rationale and an indication of the usefulness as a school readiness measuring instrument for disadvantaged populations. To my knowledge, the SES contamination factor analyzed in this paper has not been reported elsewhere in the literature.

I profited much from discussions with Prof. Robert L. Thorndike of Columbia University whose criticisms improved this paper.

I General Introduction

The Cooperative Preschool Inventory, Revised Edition (Cooperative Tests and Services, 1970)

> is a brief assessment and screening procedure designed for individual use with children in the age range of three-to-six years. (Handbook, p.4)

While the instrument was not created to be culture free, the test was meant

> to provide educators with an instrument that would permit them to highlight the degree of disadvantage which a child from a deprived background has at the time of entering school so that any observed deficits might be reduced or eliminated. (Handbook, p.4)

The 1970 revised edition consists of 64 items scored as correct or incorrect. The 1970 inventory consists of 4 subtests derived from factor analysis. These subtests are:

1) Personal-Social Responsiveness: 18 items which measure the childs knowledge of his personal world, ability to name parts of the body and carry out instructions given by an adult.

2) Associative Vocabulary: 12 items measuring awareness of the connotation of a word.

3) Concept Activation (Numerical): 15 items measuring the ability to label quantities, make judgments of "more" or "less," and to recognize seriated positions.

4) Concept Activation (Sensory): 19 items measuring awareness of sensory attributes and ability to execute certain visual-motor configurations.

The total score is the number of items correct (possible range is 0 to 64). Responses are recorded in a four page booklet on which subjects may draw when necessary. The internal design of the

inventory allows for administration by the child's own teacher who is assumed to possess minimal sophistication in measurement techniques. A question and probe technique similar to that of the Stanford-Binet is allowed: Periodic reinforcement for correct responses is given at the discretion of the examiner.

II Theoretical Rationale

No real rationale. Inventory was constructed to be an educational achievement test comprising items that appeared to tap specific skills necessary for elementary school success of children from disadvantaged backgrounds.

III Intended Practical Applications

"...It was felt that the instrument would have some merit as a way for each teacher to know the performance pattern...of her children as a means of helping to formulate individualized classroom goals, and, further, as a means of objectifying the amount of progress shown by each child." (Handbook, pp. 5-6)

IV Intended Clientele

Disadvantaged children throughout the U.S., ages three-to-six. No instructions available for test administration to children with special disabilities.

V Validity Studies

Very few validity studies were found in the literature. (See Drummond, 1972.) The most desirable kind of study--stability of change over the school years--is not available in the literature.

Sontag, Sella and Thorndike (1969) compared forty-three pairs of four year olds matched for age who were enrolled at eight different Head Start Centers in New York. The experimental group had completed 6 to 7 months of Head Start prior to testing while the

control group was just entering the program. Scores on the Form LM, abbreviated form of the Stanford-Binet, were available for each child. No significant differences in observed IQ's were found for the two groups. The Caldwell-Soule Pre-School Inventory, Standardization Edition (1969) which consists of 85 items was administered to each child. Significant differences, in favor of the experimental group, were found for the total test and on all but one of the four subtests (Personal-Social Responsiveness). The data do show between group change of approximately one-half of a standard deviation which may be considered of moderate practical significance. (Cohen, 1977).

The next study is reported in the 1970 manual (Handbook).

The revised 1970 Preschool Inventory was administered to 317 five year olds in eight kindergarten centers in North Carolina: approximately evenly divided by sex, 30% were Negro, two-thirds were Caucasian and one percent "Other." The children were divided into three SES groups based on the Coleman Index and the Home Information Scale. The following table gives summary statistics on the three groups.

SES GROUPS

	LOW	MIDDLE	HIGH
N	82	136	99
$\bar{X}$	38.6	46.5	51.5
S.D.	10.9	9.1	8.5

According to the manual, the differences between high and low SES mean CPI scores is not significant ($t = 1.8213$; d.f. = 174.)

All indications are that the t-test was computed from the data given in the above table. When it was found that the d.f. should have

been 82 + 99 - 2 = 179, not 174, a recalculation of the two-sided t-test for independent samples gave results of $t = 8.94$, $p < .001$. This study indicates that there is an SES component involved in test score results. This is undoubtedly contributed in part by the correlation between CPI and intelligence scores (a universal proxy for SES). The following table is taken from the Handbook. IQ's are S-B Full Scale scores; CPI scores are total test scores.

Age Groups	N	Correlations
3-0 to 3-11	151	.39
4-0 to 4-5	514	.59
4-6 to 4-11	420	.64
5-0 to 5-5	248	.65
5-6 to 6-11	143	.63
Total	1476	.44

The zero-older correlations are far from perfect, but are certainly population underestimates since the sample (the "standardization sample") appears to be predominantly lower-class, but this is informed speculation since no indication is given in the manual of specific SES sub-groups apart from the North Carolina study reported above.

A confirmatory factor analysis on an intercorrelation matrix of CPI and S-B scores for an age-sex-SES-geography proportional stratified random sample would be a desideratum.

VI Adaptation to Individual

Each subject is presented all 64 items as they appear in the test booklet. Items are arranged contiguously by subtest groupings but not by item difficulty within each subtest.

VII Item Selection

Originally, 161 items comprising twenty logical units, which appeared to tap the relevant domain of "educational achievement," were selected to make up the inventory. A principal components analysis (N = 171) was performed on the matrix of intercorrelations of the twenty units. Following this, a shortened version (Standardization Edition) consisting of 84 items was prepared by eliminating items that were difficult to score, had low biserials and for other statistical reasons. Later, the item pool was further reduced to the present set of 64 items.

VIII Norms

The norms for the Revised Edition are based on scores of 1531 children in over 150 Head Start classes throughout the U.S. gathered in the Fall, 1969. Norms are reported for English speaking children only for the age groups listed in the table on page 4. The sample sizes per age group range from 148 to 528, the majority falling in the 4 to 5 year old group. Some regional normative data are based on 107 to 248 children for four regions at each age level. Percentile ranks are available for each age group and for some regions.

IX Reliability

KR 20 reliability coefficients for the five age groups range from .86 to .92. For the total standardization sample, the mean score increases about four raw score points from one age group to another. The standard error of measurement for the age groups ranges from 3.1 to 3.9.

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